

WHAT IS CLAIMED IS:

1. An object recognizing apparatus recognizing a target object image from images, comprising:

pixel value distribution extracting means for extracting corresponding pixel value distributions of various regions in said object image and a background image existing as a background of said object image; and

recognizing means for recognizing said object image based on difference in pixel value distributions of various regions extracted by said pixel value distribution extracting means.

2. The object recognizing apparatus according to claim 1, wherein said pixel value distribution extracting means divides said background image and said object image into a number of blocks, respectively, calculates distance between pixel value distributions of different blocks to find a distance map as a set of distance values between blocks, represents an element extracted from each distance map as a distribution of distance vector of a prescribed dimension, and calculates a discrimination axis for discriminating distribution of the distance value vector of the background image and the target image, respectively.

3. The object recognizing apparatus according to claim 1, wherein said pixel value distribution extracting means removes lower contribution elements from said calculated discrimination axis, and calculates again the discrimination axis to reduce the number of dimensions.

4. The object recognizing apparatus according to claim 2, wherein said recognizing means calculates the distance value vector for each portion of an input image, and determines that said object image is detected, when a value calculated based on the calculated distance value vector and the discrimination axis obtained by said pixel value distribution extracting means is not lower than a prescribed threshold value.

5. The object recognizing apparatus according to claim 4, wherein  
said recognizing means calculates covariance matrix and average  
vector of pixel value for every possible block in said input image, and  
thereafter calculates said distance value vector with the number of  
5 dimensions reduced.

6. The object recognizing apparatus according to claim 4, wherein  
said recognizing means generates a plurality of images having  
different resolutions from said input image, and performs recognizing  
process on said images of different resolutions.

7. A method of recognizing a target object image from images,  
comprising  
the first step of extracting corresponding pixel value distributions of  
various regions in said target image and a background image existing as a  
background of said target image, and  
5 the second step of recognizing said object image based on difference  
in pixel value distributions of various regions extracted in said first step.

8. A method of recognizing an object according to claim 7, wherein  
in said first step, said background image and said object image are  
divided into a number of blocks, respectively, distance between pixel value  
distributions of different blocks is calculated to find a distance map as a set  
5 of distance values between blocks, an element extracted from each distance  
map is represented as a distance vector distribution of a prescribed  
dimension, and a discrimination axis is calculated for discriminating  
distribution of distance value vectors of the background image and the object  
image, respectively.

9. The method of recognizing an object according to claim 7,  
wherein  
in said first step, lower contribution elements are removed from said  
calculated discrimination axis, and the discrimination axis is calculated

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5 again to reduce the number of dimensions.

10. The method of recognizing an object according to claim 8, wherein  
in said second step, a distance value vector is calculated for each portion of  
the input image, and it is determined that said target object image is detected  
when a value calculated based on the calculated distance value vector and the  
5 discrimination axis calculated by said pixel value distribution extracting means is  
not lower than a prescribed threshold value.

11. The method of recognizing an object according to claim 10, wherein  
in said second step, a covariance matrix and an average vector of pixel  
values are calculated for every possible block in said input image and, thereafter,  
said distance value vector is calculated with the number of dimensions reduced.

12. The method of recognizing an object according to claim 10, wherein  
in said second step, a plurality of images of different resolutions are  
generated from said input image, and recognition process is performed on said  
images of different resolutions.